

Protein Synthesis — Student Worksheet: Reading The Code — Sickle Cell Anemia

Name _____

Date _____

Period _____

1. What is the shape of a normal red blood cell?
2. What is the shape of a red blood cell in a person affected with sickle cell anemia?

The following is the base sequence of one strand of DNA from a person with normal red blood cells:

C A C G T G G A C T G A G G A C T C C T C

3. What is the sequence of bases on the complementary DNA strand?
4. What mRNA would be read from the original DNA strand?
5. What amino acid sequence would this mRNA code for?

The DNA base sequence of a person with sickle cell anemia would be similar to a person with normal red blood cells except the 17th base would be changed from T to A.

6. What is the mRNA sequence for a person with sickle cell anemia?
7. What amino acid sequence would this mRNA code for?
8. How are the protein fragments in questions #5 and #7 different?
9. How many amino acids make up each protein fragment in questions #5 and #7?
10. How does the change in the 17th nucleotide affect the shape of red blood cell of a person with this disease?